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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,893	02/08/2006	Tomohiko Taniguchi	MAT-8801US	7186
52473	7590	07/01/2009	EXAMINER	
RATNERPRESTIA			NG, FAN	
P.O. BOX 980			ART UNIT	
VALLEY FORGE, PA 19482			PAPER NUMBER	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,893	<b>Applicant(s)</b> TANIGUCHI, TOMOHIKO	
	<b>Examiner</b> Fan Ng	<b>Art Unit</b> 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6,7,9,10 and 12-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4,6,7,9,10,12,14,15 and 17-19 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 3,13 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/08/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed on 03/06/2009 have been fully considered, and Applicant's arguments with respect to claims 1, 4, 7, 10 on page 13 (last paragraph) have been considered but are moot in view of the new grounds of rejection. And this office action is made Non-final, because previously indicated allowable subject matter is rejected in this office action.

### ***Response to amendment***

2. The objections made on previous office action that the title is not descriptive and missing labels on the drawing are overcome by amendment file on 03/06/2009.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (7173983 B3) in view of Nokes et al. (EP 1043874 A2) and further in view of Larsson (US 2002/0118771 A1).

As per claim 1, Meyer teaches an IFFT computing unit for performing an IFFT computation (**col. 1, line 23-25: IFFT is performed**) for a transmission line characteristic calculated from the pilot signal (**it is obvious that pilot signal is insert before IFFT process, since in OFDM (col. 1, line 5-10) protocol, IFFT usually is the last step before D/A and transmission, thus pilot is insert before IFFT unit**);

an FFT computing unit that performs an FFT computation for the signal processed by the threshold processing part and converts to a frequency-base signal (**Fig. 4, #14: FFT processor and converts the signal to frequency base**); and an interference detector (**Fig. 4, #18, #16**) that interpolates timewise (**Fig.4 #16: interpolate time wise since delay add time between each symbol**) and frequency-wise the frequency-base signal (**Fig. 4, #18: interpolate the frequency domain signal from #14**) obtained from the FFT computing unit (**both of the signal from FFT unit**), and calculates a disturbing signal added to an OFDM signal band (**Fig. 4, #20: correction is made, in order to make corrections, one need to calculate the error (disturbing signal) first**).

Meyer does not teach the replacing zero with large peak in the OFDM symbol, and use filter before the IFFT and after FFT process. But Nokes teaches a threshold processing part that compares a time-base signal (**[0015]: “if sample is equal to or beyond the threshold...”**) obtained as a result of an IFFT computation by the IFFT computing unit (**col. 1, line 5-10: the invention is related to OFDM receiver, and for conventional OFDM protocol, IFFT is on the transmitter, thus, if the threshold processing is at**

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**receiver side then it will obtained the signal from IFFT computing unit)**, with a threshold, and if the time-base signal exceeds the threshold, substitutes zero for a value of the signal (**[0015]: “... replace the sample value by zero”**); Thus, it would have been obvious for one of ordinary skill in the art to implement Nokes into Meyer, since both arts are about OFDM system so they are in the same field of endeavor and Meyer teaches an receiving scheme to compensate the OFDM symbol distortion, and Nokes suggest that replace zeros when large peaks found in the OFDM symbol, so it would have been reasonable to combine, because replacing zero in place of large peak in the OFDM can reduce the effect of impulsive interference (Nokes, [0016]).

Meyer and Nokes do not teach that apply filter before IFFT and after FFT, but Larsson teaches a windowing part that multiplies the transmission line characteristic calculated from the pilot signal, by a window function (**[0079]: “the window function is applied before IFFT”, as specified in Fig. 9, #16 (of current application)**); and an inverse windowing part that multiplies the frequency-base signal obtained from the FFT computing unit, by an inverse number of the window function multiplied in the windowing part (**[0079]: “... performing inverse windowing”. Note, the inverse windowing must be after FFT unit since the windowing is applied before IFFT, and the only way to take out the windowing effect is to perform symmetrically**). Thus, it would have been obvious for one of ordinary skill in the art to implement Larsson into Meyer, since both arts are about OFDM system so they are in the same field of endeavor and Meyer teaches an receiving scheme to compensate the OFDM symbol

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distortion, and Larsson suggest that use windowing before IFFT and after FFT, so it would have been reasonable to combine, because use windowing (filter) can minimize the effect of FFT leakage (Larsson, [0079]).

***Allowable Subject Matter***

4. Claims 3, 13, 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 4, 6-7, 9-10, 12, 14-15, 17-19 are allowed. The following is a statement of reasons for the indication of allowable subject matter:

For independent claim 4, examiner thinks the novelty is the subtraction processing that subtracts the frequency base signal obtained from the FFT computing unit, and interpolates the time-wise and frequency-wise the frequency-base signal obtained from the subtraction unit.

For independent claims 7, 10, examiner thinks the novelty is the transmission line estimating part that performs the calculation of the interpolation of time-wise and frequency-wise transmission line characteristic, based on an arrangement rule of the pilot signal, furthermore, this line estimating part is before an IFFT unit.

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Claims 6, 9, 12, 14-15, 17-19 are allowed; because they are depended on independent claims 4, 7, 10.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fan Ng whose telephone number is (571) 270-3690.

The examiner can normally be reached on Monday-Friday; 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. N./  
Examiner, Art Unit 2416

/Chi H Pham/  
Supervisory Patent Examiner, Art  
Unit 2416  
6/29/09

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